Science Action, Kindergarten – Measurement Lab, Updated 18 April 2023

**Measuring Activities**

**Objective**: Students are introduced to measure height, length, weight, capacity, temperature *(and time)* using nonstandard measuring. Students will discuss words to describe and compare these types of measurements *(taller, smaller, longer, shorter, heavier, warmer, colder, etc.)*.

*Option A:* Activities can be done as stations – there is a Height, Length, Weight, Capacity, Temperature *(and optional Time)* Station. Recommend an adult at each station to supervise/answer questions, engage students in discussion. Students rotate through stations.

*Option B:* Focus on one topic at a time *(ie. Height)*, discuss topic as a class *(ie. What is Height? What are some ways to measure height?)*. And make various activities stations for students to rotate through *(ie. measuring height, guess which animal is taller, organize city from shortest to tallest, etc.).*

*Option C:* Pick and choose activities that work best for you and your students.

Teachers – there is an accompanying PowerPoint presentation you can use to introduce topics, present stations, and review worksheet answers.

**Height Station**

**Discussion Points:**

* What is Height? What are some ways to measure height? Discuss terms like “taller” and “shorter/smaller.”
* When Comparing Height, make sure objects line up at one end. Then compare.

**Height Activities:**

1. Tape long white paper to a door or wall. Draw a line. *(The average height for a 5-year-old is about 42 inches.)* Measure children’s height. Discuss if students are taller or shorter than the line.
2. Guess which animal is taller! Student’s mark their guesses and answers. *(Adult uses measuring tape with children’s help to determine the various heights.)*

*Brown Bear* – when standing 8-9 feet tall

*Human* – average height is 5 feet 9 inches

*T-Rex* – between 12-13 feet tall (though 40 feet in length!)

*Giraffes* – male giraffes are up to 18 feet tall (females are up to 14 feet tall)

*Ostrich* – fully grown adults can reach heights between 7-10 feet tall

*Bald Eagle* – height is 28-38 inches (though wingspan is 5.5-8 feet!)

*Meerkat* – 10-13 inches tall

*Kangaroo* – kangaroos grow between 3-8 feet tall, the Red Kangaroo can grow to 6 feet tall

1. Find something taller/shorter than your hand. Draw a picture of it.
2. Organize city buildings from shortest to tallest. What color is the tallest building? What color is the shortest?

Requires:

* Large white paper to measure height, pencils to mark height
* Tape (to tape large white paper to wall, blue take provided)
* Measuring tape to measure animal heights
* City Buildings (6 kits)
* Pencils to mark worksheet
* Measuring Height Worksheet

**Length Station**

**Discussion Points:**

* What is Length? What are some ways to measure length? Discuss terms like “longer” or “farther” and “shorter.”
* Rules of Measuring:(1) Start at one end; (2) No gaps, straight line; (3) Stop at the end; (4) Use the same tool (and same size) the whole time.
* When Comparing Length, make sure objects line up at one end. Then compare.

**Length Activities:**

1. How far can you jump? Standing Jump: Use painter’s tape to create a line on floor. A student stands behind the line and jumps as far forward as they can, without falling or touching the floor with their hands. Mark that spot. The student could have a second and third attempt to jump. Compare the distance of the student’s 2nd and 3rd jumps with their first jump.
2. There are four pictures of items on cardstock *(a pencil, car, banana, grasshopper)*. Use paperclips to determine how long each item is.
3. Organize strings from shortest to longest. What color is the shortest string? What color is the longest?
4. There are two pictures showing a path. Using the small blocks, how long is each path in blocks? *(Note that student numbers may differ from the slideshow by 1-3 blocks.)*

Requires:

* Painters Tape
* Large paperclips (all one size) and Cardstock items to measure (there are 4 items, 3 sets of those)
* Strings (6 sets)
* Blocks and Cardstock Paths (2 paths, 3 sets of those)
* Pencil
* Accompanying Print Out

**Weight Station**

**Discussion Points:**

* What is Weight? What are some ways to measure weight? What are some words we use to compare weight? *(heavier, lighter)*
* Rules for Comparing Weight:Using a balance scale, the heavier object goes down. *(When setting up scales, please first make sure the empty buckets are balanced. You know the scale is balanced when the pointer and center line up. You can adjust the slider as needed.)*
* A pound is a unit of measure we use to determine how much something weighs. A pound can equal a can of soup, a loaf of bread, a box of cereal or a small tablet.
* *Optional: There are different types of scales. In this kit there is a balance scale, a kitchen scale and a hanging scale that you can show students.*

**Weight Activities**

1. Using balance scales: How many blocks does a [clothespin, book] weigh? Students can then try seeing how many blocks other objects weigh, using items in their kit.
2. Using balance scales: Which items are heavier? Marble or Eraser, bolt or airplane, marble or star, button or airplane. Students can then try weighing and comparing objects in their kit.
3. Using a kitchen scale: A pound is a unit of measure we use to determine how much something weighs. A pound can equal a can of beans, a loaf of bread, a box of cereal or a small tablet. Do you think the [block, book, wooden puzzle box] weigh more than a pound? Students can then try other objects from the classroom *(ie. a shoe, crayon box, 3 books, etc.).*

Requires:

* Balance Scales *(5 balance scales)*
* Smaller blocks
* Objects to Weigh *(5 kits with 11 identical items in each: clothespin, book, marble, insect, airplane, bolt, eraser, cube, rectangular block, star, button)*
* Kitchen Scale
* Mega Blok, Book, Wooden Puzzle Box
* Pencil
* Accompanying Print Out

**Capacity Station**

**Discussion Points:**

* What is capacity? What are some words to describe capacity? *(a container may hold more or less, be full, empty, nearly or half full/empty)*
* What are some things we might measure? *(ie. ingredients for a recipe, will a box will hold all my dinosaur toys, can I fit my books and lunch and water bottle in my backpack, how much jam can we put in a jar, can we fit the family and our luggage in the car for a road trip, etc.)*
* When measuring, we want to fill the cup just to the top – no more, no less.

**Capacity Activities**

1. Using cardstock images [cloud, tooth] and small blocks: How many blocks fill each shape? *(Note that student numbers may differ from the slideshow by 1-3 blocks.)*
2. Pom poms! Have students pick two containers. How many pom poms fit in each? Which one holds more? *(or do they hold the same amount?)* Students can then try other containers.
3. How many scoops fill 1 Cup? Students can scoop dried beans using Cup A (1/3 cup, pink) and Cup B (1/4 cup, blue) to see how many scoops fill up the 1 Cup (green).
4. Matching Memory Game introducing capacity concepts (full, half full/half empty, nearly full, nearly empty, empty).

Requires:

* Plastic box with measuring cups and dried beans
* Plastic box with pom poms and various containers
* Cardstock shapes [cloud, tooth] and small blocks
* Matching Memory Game (3 sets)
* Pencil
* Accompanying Print Out

**Temperature Station**

**Discussion Points:**

* What is temperature? What are some ways to describe temperature?
* We can use a thermometer to measure temperature. Explain how a thermometer works – higher the red, the warmer the temperature.
* For what do we use a thermometer? *(ie. to measure the temperature outside, to see if food is cooked, to see how warm the pool water is, to see if a person has a fever, to see if a fire is hot enough to melt certain metals, etc.)*

**Temperature Activities**

1. Hand Boiler: Your hands can cause this liquid inside to boil! Hold onto the bottom. As your hands warm the liquid, you will see it rise and then start to bubble.
2. Paper/Real Thermometers: Check out these thermometers. What do you notice? (ie. There are numbers on the side. The numbers get bigger. The liquid is red.) What does a thermometer look like when the temperature is hot? What does the thermometer look like when the temperature is cold?
3. What are some things you wear when the temperature outside is hot? Warm? Cold? What are some things you like to do? How would you describe the temperature in the summer? Fall? Spring? Winter?

**Time Station *(Optional)***

**Discussion Points:**

* What is time? What are some ways to describe time?
* We measure time in seconds, minutes and hours, days, months and years!
* Can you think of why we might need to measure time? *(ie. timing a race, know how long a soccer game/piano lesson lasts, know how long it takes to drive somewhere or for a package to arrive at your house, or how long to cook food, etc.)*

**Time Activities**

1. How many years have you been on earth? *(Traveled around the sun? How old are you?)* How many months have you been in school?
2. How many jumping jacks can you do in 30 seconds? Can you run in place for 10 seconds?
3. Can you not smile for 1 minute?
4. When does time feel like it is going really fast? When does time feel like it is going slowly?
5. What are some things you do in the morning? What are some things you do in the afternoon? What are some things you do in the evening?

Video Reference Suggestions

Measurement Introduction for Kindergarten
<https://www.google.com/search?q=how+to+measure+for+kindergarten&rlz=1C1SQJL_enUS781US781&oq=how+to+measure+for+kinder&aqs=chrome.0.0i512j69i57j0i22i30l8.6658j0j7&sourceid=chrome&ie=UTF-8#fpstate=ive&vld=cid:44f1db0c,vid:8lD3qDZdnp8>

Measuring Length with Paperclips – Rules (What’s wrong?)
[*https://www.youtube.com/watch?v=q8o7n-A0SC0*](https://www.youtube.com/watch?v=q8o7n-A0SC0)

Info References

* Animal Heights:
	+ <https://a-z-animals.com/blog/the-8-tallest-animals-in-the-world/>
	+ <https://www.pbs.org/wnet/nature/blog/giraffe-fact-sheet/>
	+ <https://www.pbs.org/wnet/nature/blog/kangaroo-fact-sheet/#:~:text=A%20kangaroo%20can%20reach%20heights,can%20grow%20six%20feet%20tall>.
	+ <https://dinosaurfactsforkids.com/how-tall-was-a-t-rex/>
	+ <https://www.healthline.com/health/average-height-for-men#u-s-height>
	+ <https://www.livescience.com/55478-octopus-facts.html#:~:text=The%20common%20octopus%20(Octopus%20vulgaris,and%20weight%20around%20110%20lbs>.
	+ <https://www.pbs.org/wnet/nature/blog/bald-eagle-fact-sheet/#:~:text=Size%20and%20Weight%3A&text=Even%20their%20nests%20can%20weigh,is%205.5%20to%208%20feet>.
	+ <https://www.livescience.com/27406-meerkats.html#:~:text=Meerkats%20are%20small%20animals%2C%20measuring,centimeters)%20from%20head%20to%20rump>.